Given a string S, Dexter wants to find the number of different substrings in S. He considers two substrings same if they have a cyclic permutation which is same.

If $T = T_1T_2T_3 \dots T_n$ is a string of length n then it has n cyclic permutations and they are $T_iT_{i+1} \dots T_nT_1T_2 \dots T_{i-1}$ for all $1 \leq i \leq n$. (Note that, T_{n+1} and T_0 are non-existing).

For example, if $T =$ "`abcd`" there are 4 cyclic permutations and they are: "`abcd`", "`bcda`", "`cdab`" and "`dabc`".

So, string "`aba`", "`aab`" and "`baa`" are all considered same. But "`abc`" and "`bac`" are different as there is no cyclic permutation of them which are same.

Input

First line contains an integer T ($T \leq 50$) denoting the number of test cases. Each of the next T lines contains a string S which is composed of only lowercase latin letters. You can assume that the length of S is between 1 and 200 inclusive.

Output

For each test case, output the number of different substrings in a line.

Explanation:

If $S =$ "`abcba`" there are 10 cyclic different substrings and they are: "`a`", "`b`", "`c`", "`ab`", "`bc`", "`abc`", "`bcb`", "`cba`", "`abcb`" and "`abcba`".

Sample Input

```
3
abcba
aab
zzxzz
```

Sample Output

```
10
5
7
```